rise to central hallucinations. Such a peripheral origin seems common. Prof. Raggi has gathered 15 cases of unilateral hallucination from the literature; 9 were of hearing, 6 of sight; the left side was affected 11 times, the right 4, thus falling in with the view that makes the left half of the body predominantly sensory, the right predominantly motor.

IV.—MISCELLANEOUS.

The Double Brain. H. MAUDSLEY, M. D. Mind, April, 1889.

How the two hemispheres co-operate for the work of one mind is a question the answer to which must at present partake of speculation. Maudsley's answer, though something less than demonstrative, recommends itself at a number of points. In a discussion of the motor functions of the hemispheres he shows that, like the eyes, they have a large field of action in common, but also partial fields not in common. The same may be assumed of their sensory functions. Their relatively greater independence as centers of consciousness does not wholly destroy their unity of function. That rests upon the unity of feeling and action, and these in turn on the unity of the organic life of the single body. The brain is not a superadded regulator of the body, but part and parcel of it and its representative. The hemispheres act together, however, only when they have been trained to act together, as the eyes learn by experience to unite their double images. One hemisphere may, perhaps, control what has become automatic, but both probably co-operate for close attention and for the best apperception. Loss of the unifying power and improper action of the hemispheres makes mental disturbance. Mania and melancholia may be conceived as resulting respectively from an elevation and depression of the unifying power, the "disintegration of the ego" attending epileptic attacks from its perversion. For abundant illustration of the theory in the case of abdominal wounds, dreams, the powers of erratic geniuses, etc., the original should be consulted.

Muscular Movements in Man and their Evolution in the Infant . . . . together with inferences as to the properties of the nerve-centers and their modes of action in expressing thought. FRANCIS WARNER, M. D. Journal of Mental Science, April, 1889.

The emphasis laid by modern psychology on the motor side of mind makes such studies as those of Dr. Warner important. The first of the three sections of his article presents the relations of movements as to time, quantity, antecedents, delay, reinforcements, sequence, etc., gives something of the movements of different bodily parts, and shows the connection of movements with the nervous system. In illustration, fatigue and sleep are described in motor terms. The second section deals with the development of motion. At first there are certain reflexes and respiration. When the child is awake there are also more or less constant irregular movements, especially of the smaller members. These spontaneous movements the author calls microkinesis. They are not at first influenced by stimuli to sight and hearing, though the reflexes respond to touch. Reinforced action appears in the child's crying. In the following weeks the movements gain in force and extent, and new ones appear. At four months the

child is affected by stimuli of sight and hearing; the microkinesis is temporarily inhibited by them (finely shown in graphic tracings), and a little later such inhibition is followed by general movements of response. There is evidence of retention, but no delay in the responses. At three years the control of the senses is very much widened; delayed and compound responses and those disproportionate to the stimuli are frequent; there is also imitation—all showing increased complication and interaction in the centers. At ten there is little microkinesis, and the responses to sensations are yet more delicate and varied. In the third section the author draws his conclusions as to the cerebral side of this evolution. The most important of these are connected with what he terms the diatactic action of the nerve cells, that is, their preparation for combined action. This diatactic action takes place in periods of inhibition, and is shown by the complicated motions which follow. Thought, which can be known only by motion of some kind, is the correlate of this diatactic action. The discharge of the functionally united cells need not, however, be directly into the muscles, but may spend itself in forming other unions. Motions of intelligence differ from others in their better adaptation. The cerebral qualities that favor such motions are given as follows: "1. Action in many small parts, not necessarily directly stimulated by any present or immediate antecedent forces. 2. Retentiveness and capacity for delayed expression upon a subsequent stimulation. 3. Capacity for the formation of functional unions among cells upon slight stimulation, such unions sending efferent currents to certain centers or muscles, with exactness, upon their stimulation."

Untersuchungen über den Musiksinn der Idioten. Dr. WILDERMUTH. Jahressitzung des Vereins der deutschen Irrenärzte, 1888. Allg. Zeitschr. f. Psychiatrie, Bd. XLV, H. 5–6.

The musical sense of idiots has attracted notice, but seems never before to have been specially investigated. The author has examined 180 of that class, and for comparison, 82 children from 7 to 13 years old. The less defective portion of the idiots were tested for compass of voice, certainty in giving a note, ability to distinguish the tones of a chord, musical memory, etc. They were marked on these tests by a credit system, and divided into four grades. The percentage of the whole number in each grade was as follows:

	Grade I.	Grade II.	Grade III.	Grade IV.
Idiots.....	27 (16)	36 (29)	26 (36)	11 (19)
Children.....	60	27	11	2

The percentages in parentheses are for a certain number selected from the full list whose mental state was that of children 2–4 years old, and who were in general considered incapable of education. Considering that the children had had a good deal of training and the idiots little, and that the investigation was made difficult by the general helplessness of the latter, and, in the case of many, by their lack of concentration, the showing is relatively as well as absolutely good. Female subjects, both normal and abnormal, were the more talented. In rhythm no errors were made, except by three idiots. With the still more defective portion of the idiots (30 cases) simpler tests had to be used (noises, a metronome, music-box, etc.), and the effect judged from aspect and gesture. Five failed to respond.